

Supplementary Material

Hydrogel based rapid test method for detection of *Escherichia coli* (*E.coli*) in contaminated water samples

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Table S1 List of eight different enzymatic substrates used in this work.

Enzymatic Substrate Label	Enzymatic Substrate
A	6-chloro-3-indolyl- β -Dgalactopyranoside (Red-Gal)
B	2-nitrophenyl- β -Dgalactopyranoside (ONPG)
C	4-methylumbelliferyl- β -Dglucuronide, trihydrate (4-MUG)
D	5-Bromo-6-chloro-3-indolyl- β -Dglucopyranoside (Magenta Gluc)
E	4-methylumbelliferyl- β -Dgalactopyranoside (MUGal)
F	5-bromo-4-chloro-3-indolyl- β -Dgalactopyranoside (X-Gal)
G	5-bromo-6-chloro-3-indolyl- β -Dgalactopyranoside (Magenta Gal)
H	4-methylumbelliferyl- β -Dglucuronide, dehydrate (MUG)

Table S2 List of 21 different water samples used in this work.

Sample No.	Contents in Water Samples
1	<i>E.coli</i> K-12 (grown in LTB)
2	<i>E.coli</i> K-12 (grown in Nutrient Broth)
3	<i>E.coli</i> ATCC 11229 (cultured in LTB)
4	<i>E.coli</i> ATCC 11229 (cultured in Nutrient Broth)
5	<i>E.faecalis</i>
6	<i>S.enterica</i>
7	<i>B.subtilis</i>
8	<i>B.subtilis</i>
9	DI Water without bacteria, metals and ions
10	<i>E.coli</i> K-12, ATCC 11229, <i>E.faecalis</i> , <i>S.enterica</i> , and <i>B.subtilis</i>
11	<i>E.coli</i> K-12, <i>E.faecalis</i> , <i>S.enterica</i> , and <i>B.subtilis</i>
12	<i>E.coli</i> ATCC 11229, <i>E.faecalis</i> , <i>S.enterica</i> , and <i>B.subtilis</i>
13	<i>E.coli</i> K-12, ATCC 11229, and cadmium
14	<i>E.coli</i> K-12, ATCC 11229, and lead

15	<i>E.coli</i> K-12, ATCC 11229, and sodium fluoride
16	<i>E.coli</i> K-12, ATCC 11229, and sodium chloride
17	<i>E.coli</i> K-12, ATCC 11229, cadmium, lead, sodium fluoride and sodium chloride
18	<i>E.coli</i> K-12, ATCC 11229, <i>E.faecalis</i> , <i>S.enterica</i> , and <i>B.subtilis</i> , cadmium, lead, sodium fluoride and sodium chloride
19	<i>E.coli</i> K-12 and Ferric Chloride
20	<i>E.coli</i> ATCC 11229 and Ferric Chloride
21	DI water with no bacteria, metals and ions

Table S3 Effect of optimized chemical composition (Red-Gal, B-PER and LTB) on 21 different water samples used in this work.

Sample No.	Contents in Water Samples	Effect of optimized chemical composition (Red-Gal, B-PER and LTB)
1	<i>E.coli</i> K-12 (grown in LTB)	Color produced
2	<i>E.coli</i> K-12 (grown in Nutrient Broth)	Color produced
3	<i>E.coli</i> ATCC 11229 (cultured in LTB)	Color produced
4	<i>E.coli</i> ATCC 11229 (cultured in Nutrient Broth)	Color produced
5	<i>E.faecalis</i>	No color
6	<i>S.enterica</i>	No color
7	<i>B.subtilis</i>	No color
8	<i>B.subtilis</i>	No color
9	DI Water without bacteria, metals and ions	No color
10	<i>E.coli</i> K-12, ATCC 11229, <i>E.faecalis</i> , <i>S.enterica</i> , and <i>B.subtilis</i>	Color produced
11	<i>E.coli</i> K-12, <i>E.faecalis</i> , <i>S.enterica</i> , and <i>B.subtilis</i>	Color produced
12	<i>E.coli</i> ATCC 11229, <i>E.faecalis</i> , <i>S.enterica</i> , and <i>B.subtilis</i>	Color produced
13	<i>E.coli</i> K-12, ATCC 11229, and cadmium	Color produced
14	<i>E.coli</i> K-12, ATCC 11229, and lead	Color produced
15	<i>E.coli</i> K-12, ATCC 11229, and sodium fluoride	Color produced
16	<i>E.coli</i> K-12, ATCC 11229, and sodium chloride	Color produced
17	<i>E.coli</i> K-12, ATCC 11229, cadmium, lead, sodium fluoride and sodium chloride	No color
18	<i>E.coli</i> K-12, ATCC 11229, <i>E.faecalis</i> , <i>S.enterica</i> , and <i>B.subtilis</i> , cadmium, lead, sodium fluoride and sodium chloride	No color

19	<i>E.coli</i> K-12 and Ferric Chloride	Light color produced
20	<i>E.coli</i> ATCC 11229 and Ferric Chloride	Light color produced
21	DI water with no bacteria, metals and ions	No color